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Reconceptualizing mirroring: Sound imitation and rapport in naturally occurring interaction

Beatrice Szczeppek Reed

Abstract

This study interrogates the frequently made claim that mirroring behavior is directly linked to interpersonal rapport. The paper proposes a more nuanced conceptualization of the positive effect of mirroring, showing it to be underpinning not affiliation as such but instead speakers' joint commitment to a common interactional cause. The analysis of naturally occurring talk shows that sound imitation is primarily an affiliation-neutral resource that facilitates the progression of interaction. The paper argues that socially embedded mirroring behavior is more than a behavioral manifestation of the motor resonance described in social neuroscience. Mirroring as part of jointly achieved talk is one of several mechanisms for conversational participants to establish progressivity, that is, trajectories of social action, sequence and stance. The data also show that sound mirroring, when it is part of naturally occurring interaction, is not automatic, but that participants choose to mirror, or not. It is proposed that socially situated imitation is reconceptualized as facilitating social collaboration and the joint achievement of interaction more broadly, rather than empathy or rapport in a narrow sense. Such a reconceptualization of mirroring has the potential to change psychologists', sociologists' and linguists' understanding of how humans build sociality.

Keywords: affiliation; empathy; progressivity; prosody; sequential organization; imitation; resonance

1. Introduction¹

The discovery of the mirror neuron system for the combined coding of action and action perception (Di Pellegrino et al. 1992; Rizzolatti et al. 1996; Rizzolatti & Craighero 2004) accelerated cross-disciplinary research on the fundamental intersubjectivity of human experience, which had long been accepted in parts of the social sciences (Cooley 1902; Mead 1934; Goffman 1959; Garfinkel 1967; Blumer 1969; Sacks 1992). Research has since linked neural mirroring with imitation (Hurley & Chater 2005a; 2005b), and in turn with Theory of Mind (Gallese & Goldman 1998), affiliation (Kinsbourne 2005) and empathy (Iacoboni 2009). As a result of this work, mental and behavioral mirroring and related phenomena such as alignment, accommodation, convergence and motor mimicry have become priority foci in a number of fields, including psycholinguistics, sociolinguistics, neurolinguistics and social neuroscience. While these approaches differ considerably with regard to the phenomena they are concerned with (mental, behavioral, neural), they have in common an objective to understand how intersubjectivity is enacted through imitation and synchronization processes.

¹ I would like to thank Jessica Butler, Alan Cribb, Sharon Gewirtz, Eva Ogiermann, Ben Rampton and the anonymous reviewers for their helpful comments on previous versions of this paper.

Almost all existing work on mirroring phenomena is based on elicited experimental data. In recent years ecological validity has become a core concern for linguistic and psychological enquiry as researchers have become aware of the complexity and systematicity of naturally occurring behavior (Zaki & Ochsner, 2009; 2012; Speed et al. 2017). In response to this gap, the work reported here presents an analysis of the mirroring of prosodic sound patterns in naturally occurring conversation. The results show that when prosodic mirroring is studied in real life interactions, its role is not to communicate empathy and affiliation but instead to establish coherent trajectories of action: by mirroring others, speakers principally align their *talk*, which may or may not co-occur with an alignment of emotions or their expression.

2. Research context

Over the last three decades imitation research has been inspired by groundbreaking work in neuroscience, where the discovery of the mirror neuron system in macaque monkeys revealed a set of neurons that responds both when an action, such as grasping an object, is being performed, as well as when it is being observed in another actor (Di Pellegrino et al. 1992; Rizzolatti et al. 1996). These neurons thus mirror the action of an observed actor as if they were performed by the observing self. It has since been shown that the human brain ‘resonates’ in reaction to observed actions in a similar way (Iacobini et al. 1999; Buccino et al. 2001; Grezes et al. 2003; Gallese, Keysers & Rizzolatti 2004). In response to this work, other fields have begun to investigate mental alignment as well as behavioral imitation. Two areas that have seen a surge in academic interest are the role of language; and the connection between imitation and empathy.

2.1 Imitation and language

Linguistic imitation and synchronization phenomena have been studied in a number of academic fields, including psycholinguistics, neurolinguistics, sociolinguistics and conversation analysis. Terms that have been used for overlapping phenomena include mirroring, alignment, convergence, accommodation and matching. Four broad strands of research are outlined here very briefly.

Pickering and Garrod’s (2004; 2013) influential psycholinguistic research assumes that in dialogue, speakers’ linguistic representations become aligned as a result of an innate tendency to imitate. Representational alignment is seen as a fundamental aspect of language processing. Pickering and Garrod’s (2004) interactive alignment model suggests that alignment at different levels of representation (situation model, semantic, syntactic, phonological, phonetic) provides a ‘resource-free and automatic’ (p. 173) mechanism for dialogue processing. Alignment is understood to be the result of ‘structural priming’ through exposure to language input produced by other speakers and therefore is seen as an unconscious process (Howes, Healey & Purver 2004; Wachsmuth et al. 2013). Pickering and Garrod’s model has inspired a large amount of psycholinguistic research, including on phonetic convergence (e.g. Pardo 2006; 2013), where articulatory alignment is seen as an automatic accommodation process. More recently, the authors have put forward an account for alignment as an automatic mechanism for predicting the actions of others by constructing forward models of perceived actions and a process of ‘covert imitation’ (Pickering & Garrod 2013).

In another large arena for research on language imitation, neurolinguistic studies have shown that the passive listening to speech stimuli activates the motor areas that are

associated with the articulation of the sounds involved (e.g. Fadiga et al. 2002, D'Ausilio et al. 2011). This has inspired work on the neural correlates of phonetic convergence (e.g. Garnier, Lamalle & Sato 2013). Both psycholinguistic and neurolinguistic approaches share an interest in alignment as an automated response and start from the mirror neuron system as a physiological determiner for language imitation (Studdert-Kennedy 2002). The phenomenon for which work in these fields seeks to provide an analytical account is mirroring as cognitive or mental representation, rather than the imitative behavior resulting from it.

In sociolinguistics, Giles (1973) laid the ground for a field of research that is concerned with speakers' attempts to reduce social differences with regard to, for example, class by adapting their communicative styles to those of their co-participants. Much of this work focuses on accent convergence, and specifically on how speakers of regional, socio-economic or gendered sociolects accommodate to speakers of accents considered to be more prestigious (Giles, Coupland & Coupland 1991). This process is assumed to minimize social distance and increase factors such as attractiveness, status and communicative effectiveness (e.g. Gregory et al. 1997). Underlying Giles's Communication Accommodation Theory is an interest in social identity, for example, with regard to age (McCann & Giles 2006), gender (Aguilar 2011) and native – non-native speaker interactions (Zuengler 1991; Smith 2007).

Finally, conversation analytic research has focused on mirroring and synchronizing behavior in naturally occurring interaction. For example, this author has explored interactants' joint and collaborative orientation to prosody in conversation (Szczepek 2001, Szczepek Reed 2006, 2009a, 2009b, 2010a, 2010b, 2012, Szczepek Reed & Li 2014). This work has shown that aligning certain aspects of talk is subject to social norms, similar to turn taking (Sacks, Schegloff & Jefferson 1974). Other studies have considered the matching of individual prosodic parameters, such as loudness (Goldberg 1978), pitch (Couper-Kuhlen 1996, Gorisch, et al. 2012, Gorisch et al. 2015) and rhythm (Auer, Couper-Kuhlen & Müller 1999; Hawkins, Cross & Ogden 2013) and have explored how repetition of these parameters contributes to specific practices and settings, such as backchannelling (Müller 1996) or child-carer interaction (Tarplee 1996; Wells 2010; Wells & Corrin 2004). In related work, Ogden (2006) has shown that agreeing and disagreeing with prior assessments involves speakers' orientation to the prosody of others by either upgrading (strong agreements and disagreements) or downgrading (agreements that preface disagreement) a previous speaker's phonetic design. Similarly, Couper-Kuhlen (2014; 2018) has investigated how particles such as 'oh' can be upgraded or downgraded prosodically in relation to prior informings. Beyond the prosodic domain, Li (2014) and Ruusuvuori & Peräkylä (2009) have explored postural and facial other-orientation. In contrast to the representationally oriented work mentioned above, conversation analytic research has treated mirroring as a conversational practice in the sense of Schegloff (1997), that is, as interactionally situated and accomplishing social actions that emerge from the local negotiation of talk.

2.2 Imitation and affiliation

Imitation and related phenomena have been frequently linked to empathy, affiliation and rapport building. Research that assumes these links typically sees imitation as an unconscious, automated process that communicates a primitive type of empathy (Bavelas et al. 1987; Van Baaren et al. 2011). Fuchs (2017), in describing levels of empathy, speaks of 'mutual incorporation', that is 'coordination ... of two embodied

subjects' (p. 32) as primary empathy, which includes 'voice' but is principally focused on intercorporeality. This approach conceptualizes empathy as an embodied phenomenon, rather than one based on mental representation. Hatfield, Cacioppo & Rapson (1994) see emotional contagion to be the result of unconscious, automatic mimicry of facial expressions, posture and aspects of speech. Imitating others has also been linked to prosociality. For example, many studies have linked mimicry to interpersonal rapport (Bernieri, 1988; LaFrance & Ickes, 1981; LaFrance, 1982; Chartrand & Bargh, 1999; Dijksterhuis 2005), group affiliation (Lakin & Chartrand 2003; Lakin et al. 2003; Yabar et al. 2006), prosocial behavior (Van Baaren et al. 2003; Van Baaren et al. 2004; Maddux, Mullen & Galinsky 2008; Müller et al. 2012; Göritz. & Rennung in press) and to being perceived as empathic and caring by others (Maurer & Tindall 1983; Bavelas et al. 1996; Bailenson & Yee 2005; for an overview, see Gueguen, Jacob & Martin 2009). These findings have recently been extended to virtual reality behavior (Hale & Hamilton 2016). Much of this work is based on experimental participants' ranking of imitating confederates as more 'likeable', 'attractive' or 'caring'. Research in clinical psychology on embodied, nonverbal synchrony has shown that patients with disorders that affect empathy and communication, such as autism and depression, use less synchronizing behavior than control groups (Paulick et al. 2018; Xavier et al. 2018; Köhler et al. 2019; see current work by Branigan, Yuill & Hopkins 2017-2020).

In developmental psychology, the term mirroring is at times used synonymously with terms such as affect attunement or synchrony in infant–caregiver interactions (e.g. Richter 2004). Here, caregivers show empathy by sharing the infant's affect in a synchronised manner. However, they do so not by imitating the child's emotion precisely, but by coordinating their behavior and emotion display (Leclère et al. 2014; Jonsson & Clinton 2006; Jonsson et al. 2001). Such synchrony, or attunement, often involves a significant degree of imitative behavior; but it represents a broader set of interactional practices than the narrower definition of mirroring as imitation.²

In contrast to the work above the research presented here draws upon a socio-constructionist concept of empathy and affiliation, in which expressions and displays of both are seen as interactionally achieved. Conversation analytic studies have described the role of affect displays in interaction and the social construction of emotional stances (Pfänder & Gülich 2013; Peräkylä & Sorjonen 2012, Christmann & Günthner 1996); some have focused specifically on empathy (Kuroshima & Iwata 2016; Voutilainen 2012; Voutilainen, Peräkylä & Ruusuvuori 2010; Ruusuvuori 2005; 2007) and its sound patterns (Kupetz 2014a, b; Reber 2012). In this work, too, a link is frequently being established between synchronization behaviors on the one hand and successful communication on the other (e.g. contributions in Breyer et al. 2017; Couper-Kuhlen 2012a). The study presented here aims to expand the perspective on imitative behavior by suggesting that interactional mirroring plays a key role in social collaboration and the joint achievement of social life without being directly linked to the expression of empathy or affiliation.

2.3 Prosodic imitation and affiliation: a questionable link

As the brief summary above shows, the link between accommodating to others

² I am grateful to an anonymous reviewer for drawing my attention to this point.

linguistically and interpersonally has been claimed many times and perhaps understandably so. As Van Baaren et al. (2011) put it, imitation can be seen as ‘the bridge leading to empathy ... because, in essence, imitation means that interaction partners have at least some of the same constructs or behavioral representations activated in the brain’ (p. 33). However, conversation analytic work has shown that participants in naturally occurring interaction negotiate *displays of affect* rather than affect itself (Local & Walker 2008; Potter & Hepburn 2010). To correlate (linguistic) behavior with internal states skips the step during which interactants negotiate the relevance and display of internal states for each other and for their interactional goals. Irrespective of whether inner states are ‘real’ or not, their interactional management can be shown to be treated as ‘real’ in the emergent structural unfolding of talk. A distinction made in Stivers (2008) and Stivers, Mondada & Steensig (2011) between structural alignment and affective affiliation is useful here:

Aligning responses cooperate by facilitating the proposed activity or sequence; accepting the presuppositions and terms of the proposed action or activity; and matching the formal design preference of the turn. By contrast, affiliative responses cooperate at the level of action and affective stance. Thus, affiliative responses are maximally pro-social when they match the prior speaker’s evaluative stance, display empathy and/or cooperate with the preference of the prior action. (Stivers et al. 2011: 21)

Structural alignment in this sense underpins actions and sequences without being defined by a specific interpersonal stance (affiliative; neutral; disaffiliative).

Stivers’ distinction provides a helpful tool for interrogating concepts linked to interpersonal rapport and cooperation more broadly. It shows that speakers in natural conversation differentiate between practices that facilitate talk and move it forward (alignment) from those that communicate positive stances (affiliation). Similarly, concepts of imitation and mirroring can be put in the context of the sequential development of talk. Goodwin (2013) has described how interactants treat the actions of others as the ‘public substrate’ from which they draw material for their subsequent actions. This involves re-using and transforming aspects of prior talk, as in the often-cited exchange between two children from Goodwin and Goodwin (1987: 219):

- 1 Tony: Why don’t you get out of my yard.
- 2 Chopper: Why don’t you make me get out of the yard.

In their analysis of children arguing Goodwin and Goodwin (1987) and Goodwin (2006) refer to such ‘format-tying’ as ‘central to the organization of argument’ (Goodwin 2006: 449) and ‘an arena for the productive creation of new structure through systematic operations on existing structure (Goodwin & Goodwin 1987: 225-226). By re-using elements (words, syntactic structure) of a previous speaker’s turn and modifying them according to their interactional goals, a next speaker can progress the argument but use their ‘opponent’s own actions against them’ (p. 449). Beyond the realm of arguments Goodwin (2013) argues that interaction - and in fact human sociality as a whole - is established and sustained by continuing backward orientation to the semiotic materials employed by others:

Actions emerge within environments constituted through the public presence of diverse semiotic resources. Action is fashioned in part by performing operations on this substrate.

This combinatorial process makes it possible for actors to systematically incorporate structure and meaning built by others into the interior organization of their own action. By doing so they can invoke forms of knowing that would be impossible for them to display as isolated individuals. Human beings inhabit each other's actions. (Goodwin 2013: 15).

This study shows that prosody is another semiotic resource than can be drawn upon for 'format-tying' and alignment, irrespective of any affiliative connection.

3. Data and method

The data underpinning this study are eleven one-hour video recordings of naturally occurring conversations. The participants were students at a university in the North of England at the time of the recording (spring 2012) and native speakers of British English. The recordings involved two participants each and took place in ordinary, non-experimental settings, that is, settings that would have occurred irrespective of the recording taking place. In five recordings the setting was lunch on the university campus; in six it was dinner at one of the participants' homes. All participants volunteered to take part in response to an initial call which asked for permission to record pairs of friends at mealtimes. Participants were paid £10 each for participating and were also given £20 to pay for their meal. The students were told explicitly that the topic of the conversation was not relevant to the research, and that they should feel free to talk about whatever they liked. As a result, the conversational topics vary greatly, ranging from planning joint trips, to reminiscing about past parties and other people's ludicrous behavior, to complaints about academic assignments. All participants gave their consent for the anonymized data to be used and disseminated for research purposes. Recordings were made without the researcher present and on separate audio and video channels, that is, with one camera, typically positioned in the corner of the room, and one audio recording device placed on the table. A point that is often raised regarding research on naturally occurring data concerns participants' awareness of the recording device and their potential 'performance' for the camera. And indeed, in one of the recordings for this data set (Recording 11), one of the participants in referring to the camera comments that he is 'very conscious of that thing, it's interesting how conscious of it you are'. Two points can be raised in response to concerns about the 'naturalness' of naturally occurring data. Firstly, participants' awareness of being recorded cannot be avoided given the need to ensure full participant consent; however, while participants' awareness may affect their behavior to some degree, most other methods for studying human behavior involve forms of elicitation, be it through self-report or through experimental designs. By comparison, the naturalistic data recorded in ordinary settings is as natural as it can be. Secondly, even though participants may be aware of being recorded their behavior is unlikely to become 'unnatural' as a result. Instead, participants are likely to draw upon a common repertoire of interactional practices that are appropriate for a given conversational context and setting.

All audio recordings were transcribed according to transcription conventions adapted from GAT 2 (Selting et al. 2009/2011). An initial basic transcript was refined by the author for the purposes of this study. Transcripts are acknowledged to be analytical objects, twice-removed representations of the original events, and should not be treated as data in themselves (Ashmore & Reed 2000). Prosodic mirroring was initially identified aurally by the author by locating repetitions of prosodic patterns

across speakers in the parameters pitch (intonation, register), loudness, time (duration, speech rate, rhythm) and voice quality (Szczepek Reed 2011). All instances were subsequently analyzed through the phonetics software program PRAAT 6.0.30 (Boersma & Weenink 2017), where pitch, loudness and time-related mirroring were analyzed and where appropriate, confirmed. As is typical for a conversation analytic approach, a collection was built by identifying instances of the phenomenon in question, here, sequences that contained prosodic mirroring. In order to address the role of prosodic mirroring as such, all instances of prosodic mirroring were collected. Affiliation or its relevance in the sequence was not part of the first round of coding. The collection of cases of prosodic mirroring was analyzed and coded for their affiliative stance (affiliative, disaffiliative or affiliation-neutral) and in a second round of coding for the social action performed (e.g. agreement, other-correction, response to enquiry).

The theoretical framework of the study is provided by Conversation Analysis (Sacks 1992; Schegloff 2007). In this approach the natural habitat of language is considered to be naturally occurring talk rather than, say, the brain or the mind; and language is viewed as a repertoire of resources for social interaction. Therefore, the analytical focus is not on mental representations of language, nor on cognitive linguistic processes, but instead on language as, and as contributing to, social conduct. Language is also seen as emerging rather than fixed, process rather than product (Ogden and Walker, 2013), and interaction as ‘transformative’ (Goodwin, 2013): each utterance and each social action builds on prior utterances and actions, and simultaneously provides the ‘substrate’ (Goodwin 2013) for actions that follow. Analytical claims about the role and meaning of linguistic forms are evidenced by showing how participants in conversation jointly treat linguistic behaviors as occurrences of certain types of social conduct. This approach makes the use of naturally occurring data mandatory, as experimentally elicited data cannot replicate the full context of spontaneous social interaction (Hughes & Szczepek Reed 2011). In addition, the study aligns with conversation analytic work on the role of prosody in naturally occurring interaction. Prosody has been shown to play an important role in participants’ negotiation of meaning in talk, although sound patterns as such are rarely the only decisive factor and individual forms cannot be linked to specific interactional meanings of functions (see for example Walker, G. 2017; Walker, T. 2014; Zeller & Ogden 2013; Couper-Kuhlen 2012b; Szczepek Reed 2011). Prosody is therefore considered here as one of several interactional domains from which participants choose their resources for communication. Others include lexis, grammar and embodied actions.

3.1 Prosodic mirroring

This section defines prosodic mirroring and provides examples of the prosodic phenomenon itself, irrespective at this point of affiliative stance. Prosodic mirroring is defined here as the imitation of prosodic patterns in the immediately following turn by a next speaker, irrespective of lexical repetition. Extract (1) is an example. At line 2014, Kat is referring to a book she needs for her university course.

(1) KD: 00.03.51

2014 Kat: the british LIBrary doesn't even have it though.

2015 (1.1)

2016 Dan: ↑WHAT - (peak: 321 Hz)

2017 (0.7)
2018 Kat: ↑YEAH - (peak: 337 Hz)
 2019 (0.8)
 2020 well because it's an aMERican;
 2021 Dan: OH yeah;
 2022 (0.5)
 2023 Kat: BOOK.

Dan initiates repair on Kat's claim (*what*, line 2016). The prosodic design of his turn involves a high pitch step-up that peaks at 321 Hz. Kat delivers the repairing turn (*yeah*) with a matching pitch level (337 Hz), see Figure 1. Pitch level, or register matching is one of several forms of prosodic mirroring; others include matching intonation contours, speech rate, loudness, voice quality and articulation (Szczepek Reed 2006).

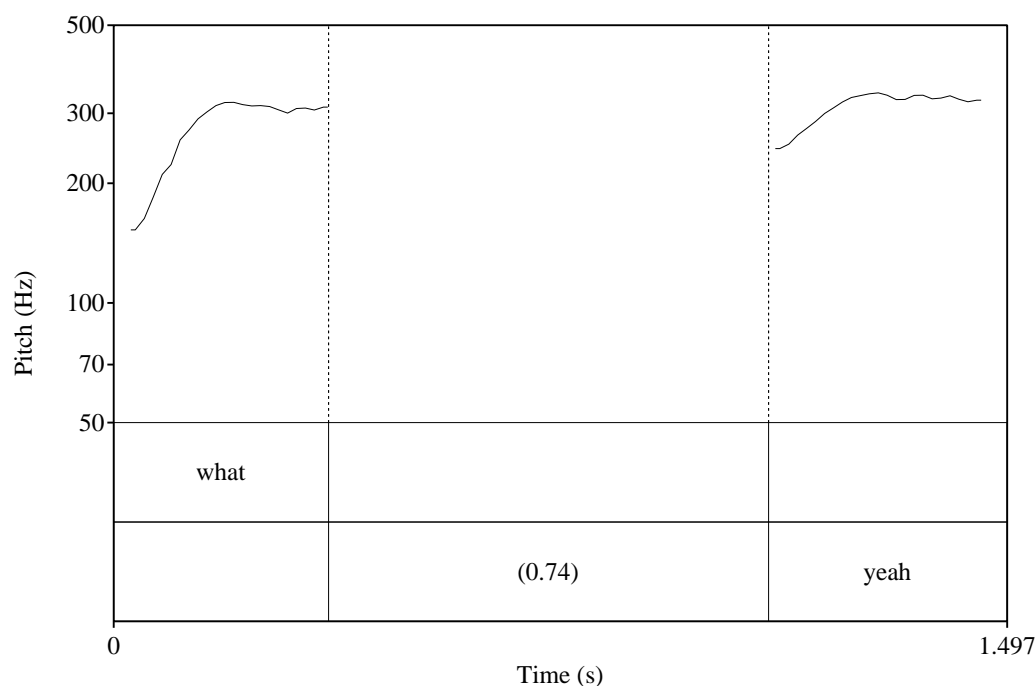


Figure 1: Pitch trace Extract 1

Instances were identified as a single case of prosodic mirroring if they occurred across one interactional sequence. Many instances below are examples of adjacency pairs or three-part sequences and were counted as single instances of prosodic mirroring. Extracts such as (2) were also considered a single instance. Lucy and Emma are co-constructing the telling of a TV episode where one of two brothers breaks a leg. Their high-pitched delivery is continued across the sequence.

(2) LE: 00.08.45

1467 Lucy: <<hh> that was REA:Lly FUNNy;
 1468 not even in like a saDIS>tic way;
 1469 cause i don't ever want people to brEak their LEGS but
 1470 like, .hh
 1471 <<hh> ↑just him hopping aROU:ND,
 1472 trying t->
 1473 Emma: <<hh> i know - >
 1474 Lucy: [<<hh> TRYing to carry ON?>

1475 Emma: [<<hh> i felt SORry for him;
 1476 but also that yeah he TRIED to carry ON;
 1477 and then and then the Other one was really anNOYED;>

Counting (1) and (2) as single instances of prosodic mirroring reflects an orientation towards mirroring as behavior rather than form: rather than using units of language (words, phrases, sentences) as the basis for understanding phonological patterns, the definition adopted here takes courses of action (repair in (1) and co-telling (2)) as the basis for identifying mirrored sound patterns.

3.2 Affiliation in interaction

In order to analyse whether and how prosodic mirroring co-occurs with affiliation, a definition of affiliation is necessary. This section defines and provides examples of affiliation in conversation, irrespective at this point of prosodic mirroring. This study follows Stivers et al. (2011) in defining *affiliative turns* as those that ‘match the prior speaker’s evaluative stance, display empathy and/or cooperate with the preference of the prior action’ (p. 21). (3) is an example.

(3) KD: 00.00.30

147 Kat: ↑OH how NI::CE;
 148 Dan: ↑YE::S;

For the purposes of this study turns that offer even minimal agreement via tokens such as *m*, *mhm*, *uhu* are included in the category of affiliative turns. The difference between minimally affiliative tokens and tokens that act as continuers (Schegloff 1982) lies both in the turns they follow on from (e.g., assessments), which may make agreement or disagreement relevant; as well as other features of their delivery. Minimally affiliative turns, while lexically empty, are often accompanied by embodied displays of agreement (e.g. nodding) and/or additional, later lexical elements that indicate affiliation, as for example in extract (10) below. In the following extract a minimal token follows an assessment and is accompanied by nodding and matching pitch:

(4) CF: 00.12.03

411 Car: ↑↑yOURs is ↑REA:Lly tAsty actually;
 412 Fel: <<nodding> ↑MM;>

In order to be able to make a strong claim regarding mirroring and its role in interpersonal rapport displays, the concept of affiliation was used in the broad sense described above, rather than the narrower concept of rapport. This allowed the analysis to be inclusive of any type of broadly affiliative turn. As stated above, the analysis did not code for affiliation in the first instance but for prosodic mirroring only. Therefore, where turns are referred to as ‘affiliation-neutral’ below, this refers to those instances in the data where prosodic mirroring co-occurs with turns that do not make affiliation relevant.

A specific form of affiliation is *empathy*. The psychological literature on empathy is extensive (see Zaki & Ochsner 2012; Baron-Cohen 2011; Decety & Ickes 2011; Baron-Cohen & Wheelwright 2004; Davis 1996). It identifies a number of phenomena under the term empathy, including what is known as cognitive empathy (knowing someone else’s internal state) and affective empathy (being affected by and able to respond to another person’s internal state). This study adopts an interactional

definition, bearing in mind that the conversation analytic method is not designed to identify participants' inner states or emotional involvement. As part of the purely observational approach adopted here, the focus is on empathetic *turns*, that is, social actions that are designed to display empathy in the socially accountable context of interaction. An empathetic turn is defined here as *a turn that displays recognition of another participant's expressed physical pain, inner state, emotion, or of the implicit possibility of that participant being emotionally affected*.

This definition is significantly narrower than – typically implicit – definitions of empathy in other conversation analytic literature. For a more broadly defined approach to 'empathic moments' see Heritage (2011), who investigates a wide range of co-evaluations of past experiences, such as music and food (p. 181), rather than expressions of recognizing and/or sharing an emotional state. Line 621 in the following extract is an example of an empathetic turn according to our definition, as it displays recognition of a prior expression of physical discomfort (line 618 – 620). This sequence does not contain prosodic mirroring, which will be significant for the discussion of results below.

(5) BM 00.18.35

614 Beth: HOW you DOing -
 615 Fel: sa- hh.
 616 WELL i been- (.)
 617 i was like i HAD to do an Essay for tomOrow;
 618 .hh but i was in the lIbrary i felt ILL,
 619 aGAIN,
 620 [like FEver,
 621 Beth: [ee- oh ↑NO:;
 622 (0.3)
 623 Fel: so i was like i'm gOing HOME;

In contrast to affiliative turns, *disaffiliative turns* are understood here as either explicitly opposing or downgrading prior stances, ridiculing prior speakers or disagreeing with prior claims or commitments, as in extract (6).

(6) MZ: 00.07.30

1198 Zack: WRITE it in- wrIte in your dIary.
 1199 Mel: <<hh> I'll reMEMber;
 1200 [dOn't WORry;.
 1201 Zack: [<<f+h> you WON'T re[MEMber k-;>
 1202 Mel: [<<hh> i WILL remEmber[:r;>
 1203 Zack: [you wOn't
 1204 remEmber;
 1205 can you wrIte it IN PLEASE;

Finally, many turns-at-talk display no affiliative stance. Such *affiliation-neutral* turns include, for example, responses to enquiries (Stivers et al. 2011), as well as acknowledgements and continuers. In the following sequence the affirmative response *yeah* does not express agreement or empathy, nor does it provide an interactionally preferred next action.

(7) BM: 00.11.05

368 Matt: do you go every YEAR.
 369 Beth: YEAH.

Responses to enquiry such as this one can operate a grammatical preference structure, according to which grammatical yes/no interrogatives carry a formal preference for 'yes' responses (Raymond 2003). Stivers et al. (2011: 21) include 'matching the formal design preference' into their definition of sequential alignment, that is, a formal preference match is not a defining criterion for affiliation.

4. Results: the affiliative stance of prosodically mirroring turns

In order to interrogate the longstanding claim that mirroring is related to empathy and interpersonal rapport, the data were examined for the affiliative stance displayed by prosodically mirroring turns. The analysis considered all instances of prosodic mirroring in the data set. Their affiliative stance was identified as being affiliative, disaffiliative or affiliation-neutral. Of the 369 instances of prosodic mirroring in the corpus, the interactional stance was affiliative in 121 cases (33%); in 231 cases (64%) it was affiliation-neutral; and in 12 cases (3%) it was disaffiliative. This section presents the three stances in turn, providing sample analyses of a number of extracts from the collection. The final sub-section presents cases of affiliation being expressed without prosodic mirroring.

4.1 Prosodic mirroring and affiliative turns

Of the 369 cases of prosodic mirroring in the collection, 121 (33%) display an affiliative stance, that is, they 'cooperate at the level of action and affective stance' and 'match the prior speaker's evaluative stance, display empathy and/or cooperate with the preference of the prior action' (Stivers et al. 2011: 21). Both affiliation display and prosodic delivery take a variety of forms, as the extracts below demonstrate. Hardly any instances involve empathy in the narrower definition, i.e. they do not display recognition of another participant's expressed physical pain, inner state, emotion, or of the implicit possibility of that participant being emotionally affected. The main action performed by affiliative prosodically mirroring turns is agreement. The collection holds 108 instances of agreeing mirroring turns in total.

(8) LE 00.11.25

423 Emma: no:: i'm prEtty sure that was WHY: HE: UHM;
 424 (0.7)
 425 nEARly got sEt on FIRE.
 426 Lucy: Oh Okay ↑huh huh
 427 (1.6)
 428 mm hhh
 429 (0.3)
 430 Emma: I'M not SURE -
 431 (0.2)
 432 Lucy: m -
 433 (0.2)
 434 N:O idEA -
 435 (0.8)
 436 Emma: °Mm°

In this rather straightforward case of agreement Lucy's agreement turn *m* (0.3) *no idea* repeats the pitch contour ending in level pitch as well as the stress pattern of

Emma's prior turn. Figure 2 below shows matching pitch levels for the end of Emma's turn and Lucy's token *m*, as well as a repetition of the overall intonation contour: a high onset (*I'm / no*) followed by declination and level pitch (*not sure / idea*).

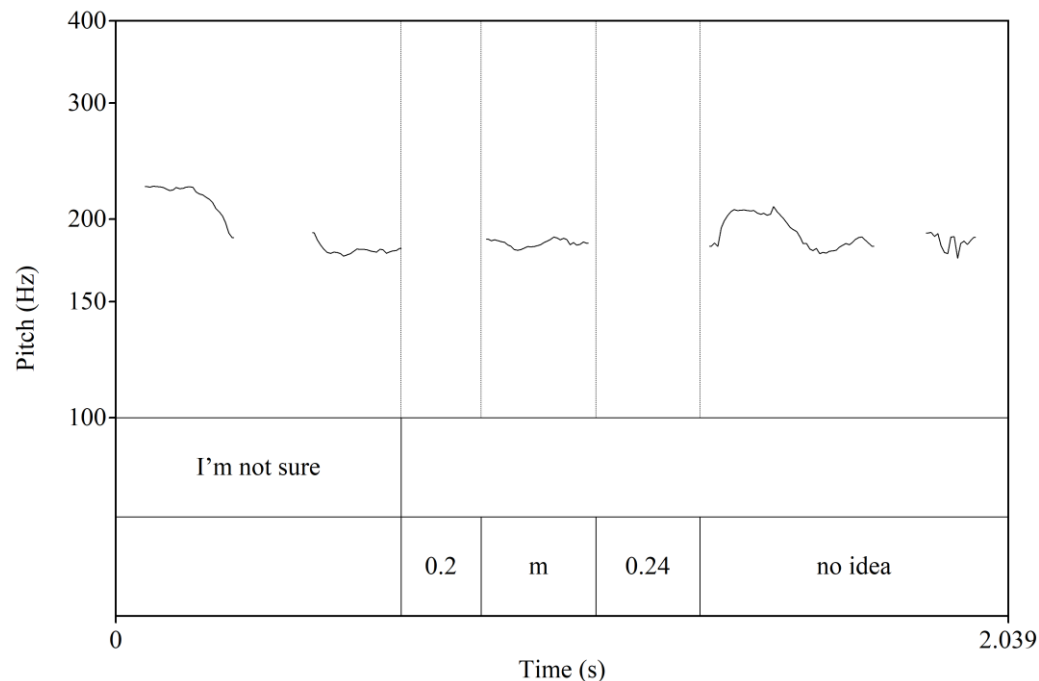


Figure 2: Pitch trace Extract 8, lines 430-434

(9) is another case of agreement, again with an instance of pitch matching. Mel's *yeah* is delivered exactly an octave higher than Zack's turn, with both turns involving a pitch drop of a major third (B-G).

(9) MZ 00.04.10

567 Zack: jUst has FIVE weeks OFF;
 568 (2.4)
 569 CRAzy;
 570 (1.5)
 571 well his degree- WHOLE degree;
 572 could be HALVED INstantly. hh.
 573 Mel: YEAH.
 574 Zack: by MAKing him (.) have LECTures up until week TEN.

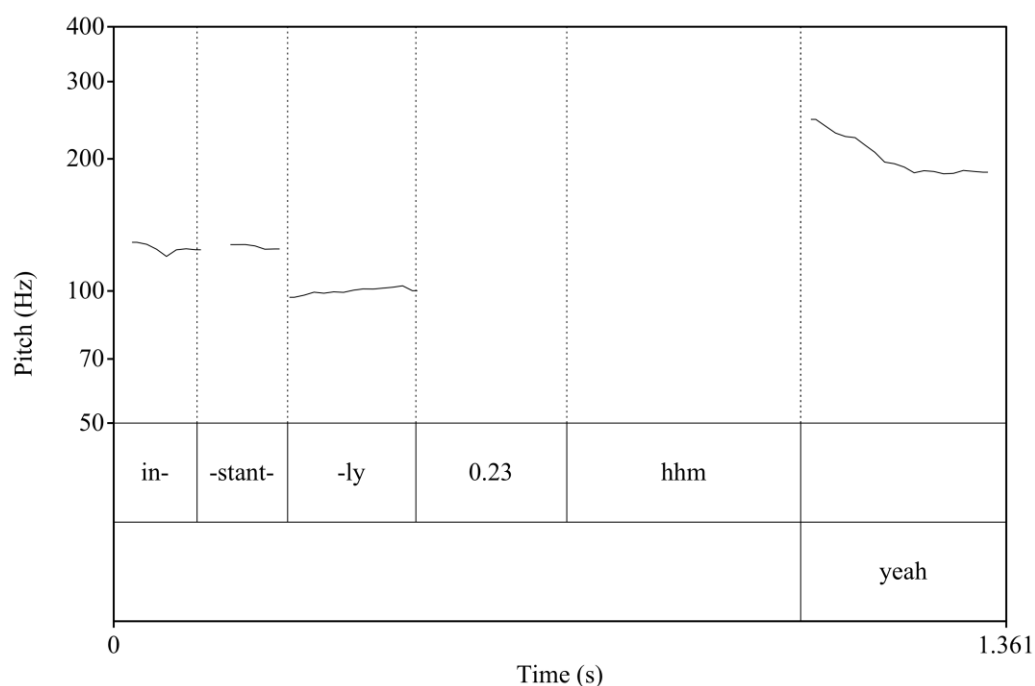


Figure 3: Pitch trace Extract 9, lines 572-574

The most frequent environment for mirroring agreement turns is assessment sequences: 81 of the 108 agreeing turns are agreements with prior assessments, that is, turns that ‘match the prior speaker’s evaluative stance’ (Stivers et al. 2011: 21). See, for example, the following three extracts, all of which occur with intonation contour matching:

(10) BM 00.02.38

1148 Beth: but thEn to be HONest,
 1149 (0.4)
 1150 i’ve BEEN ONE year and it’s been sAndy and One year and
 1151 they’ve been STONy so -
 1152 (0.4)
 1153 Matt: ↑MM:;;
 1154 (2.4)
 1155 in↑↑TRIguing;
 1156 Beth: ↑↑MM:;;
 1157 (0.6)
 1158 ex↑ACTly;
 1159 jUst depEnds -

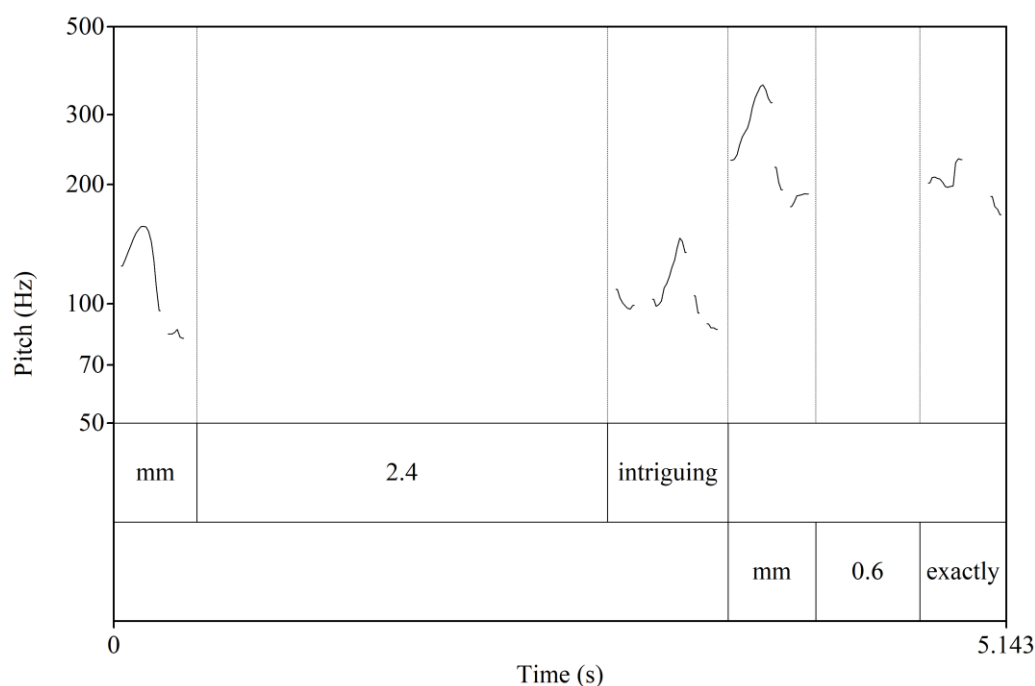


Figure 4: Pitch trace Extract 10, lines 1153-1158

(11) MZ 00.02.38

1555 Mel: <<creaky> yeah:: - >

1556 (2.3)

1557 <<h> it's ↑STILL really ↑BU>↓sy <<creak> dOwn thE:>re,

1558 Zack: <<h> ↑MYEAH ↑I was> ↓just thinking tha:t,>

1559 Mel: it is End of TE:RM;

(3) KD: 00.00.30

149 Kat: ↑OH how NI::CE;

150 Dan: ↑YE::S;

In each case the assessment by the first speaker is delivered with increased pitch movement, mostly pitch step-ups and step-downs, which are represented by upward and downward arrows in the transcripts. These findings complement those by Ogden (2006), who shows that strong agreements as well as strong disagreements are phonetically upgraded; whereas agreements that preface disagreements are downgraded. The cases of prosodic mirroring found in the corpus for this study are by definition neither upgraded nor downgraded prosodically but match the prosodic design of a prior speaker's turn. Interactionally, they are neither strong agreements nor prefaces to disagreements, but simply agreements that match the previous agreement-eliciting turn in stance and prosodic delivery. Extract (10), Figure 4 is a good example. Figure 4a shows the shorter sequence 'intriguing – mm' and its matching pitch pattern. At first glance Beth's *mm* looks as if it is prosodically upgraded, given its significantly higher pitch value.

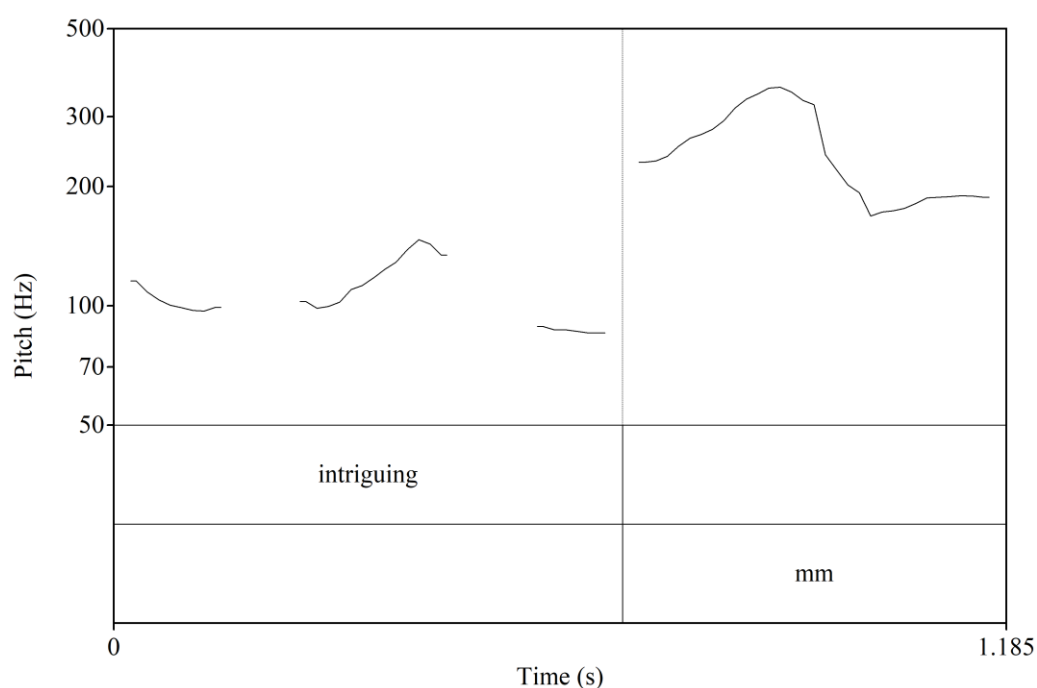


Figure 4a: Pitch trace Extract 10, lines 1155-1156

However, taking into consideration her female voice range compared to Matt's male range, her prosodically mirroring turn is in fact highly comparable. Figure 4b shows the same sequence after Beth's *mm* has been lowered by an octave. Irrespective of the pitch register of the two turns, prosodic mirroring also occurs in the form of intonation contour matching (rise-fall-level).

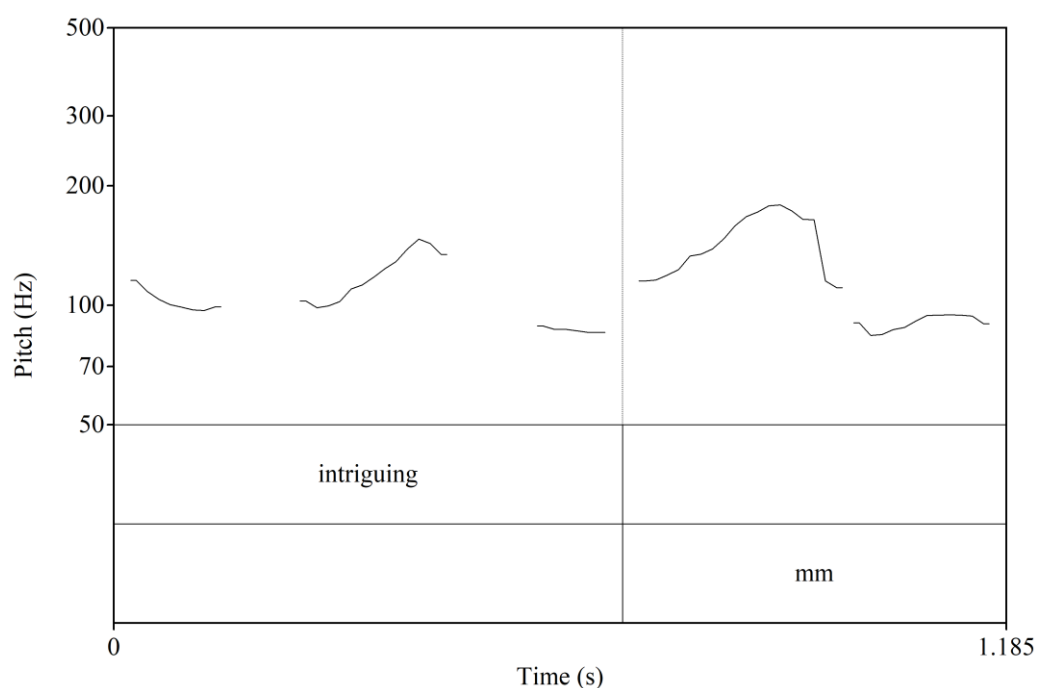


Figure 4b: Pitch trace Extract 10, lines 1155-1156, *mm* 'octave down'

The only other activity outside agreements for which the collection holds more than a single case of affiliative prosodic mirroring is playfulness (8 cases), including four cases of teasing, as in (12).

(12) BM 09.15

1841 Mat: you DO like <<p> brushing your teeth.>
 1842 Beth: m:: hm mm
 1843 Mat: <<pp> i BRUSHED mine EARlier;>
 1844 Beth: <<whisper> congrAtuLATIONS>
 1845 Mat: <<whisper> THANK YOU:>
 1846 Beth: .hh hmm mm .hh (.)
 1847 <<pp> i'd LIKE to go back to morOcco;> (.)
 1848 <<whisper> (that'd be) GOOD>
 1849 Mat: <<pp> I would like to go;>
 1850 Beth: we should ↑JUST GO;

The matched voice quality (whisper) - and reduced loudness where there is phonation - is continued across two three-part sequences which both perform surface actions: a congratulations sequence (lines 1843 – 1845) and an informing - receipt sequence (lines 1847 – 1849). However, the overall contribution of the jointly achieved quietness is one of playful 'secrecy' and display of intimacy, which subsequently leads to a proposed joint action.³ Playfulness also extends to the phonetic realm itself when it is turned towards the articulation of individual sounds. This is the case in the following extract where the two (British English speaking) participants repeatedly refer to the city of Bath.

(13) MZ 00.11.45

338 Mel: I'm gonna ask MUM;
 339 (0.3)
 340 like if i can have ONE DAY like;
 341 (0.3)
 342 where we can go OUT somewhEre really NICE,
 343 (3.2)
 344 Zack: LIKE WHERE;
 345 (0.5)
 346 CAbot;
 347 (0.8)
 348 Mel: YEAH MAYbe;
 349 or like BA:TH [bɑ:θ] or somewhere;
 350 (1.9)
 351 Zack: <<p> thAt'd be s- a::h>
 352 haven't been to BATH [bæθ] for Ages;
 353 (0.5)
 354 Mel: LOVE BA:TH [bɑ:θ] -
 355 (0.2)
 356 it's jUst my favourite place in the WORLD;
 357 (0.3)
 358 Zack: BA::TH [bɑ:θ]
 359 (0.4)
 360 Mel: BA::TH [bɑ:θ]
 361 (3.7)
 362 Zack: NICE place to LIVE wouldn't it;

³ I am grateful to Jessica Butler for making me aware of this point.

When Mel first introduces the town of *Bath* as a potential destination for a visit (line 349) this is done in a non-playful modality, as is Zack's following uptake (line 352). Zack's pronunciation differs from Mel's. Mel pronounces the word with the long open /ɑ:/ vowel that is typical of Received Pronunciation. This pronunciation is one that carries social prestige, but – as this sequence demonstrates – also has the potential for ridicule (Mugglestone 2007). Zack initially pronounces the same word with the more closed and short /æ/ vowel that is more prominent in Northern varieties of British English (Wells 1982). Mel's next mention of the word again contains the RP vowel (line 354). Zack now engages in playful mimicry of Mel's pronunciation, repeating and exaggerating the lengthening of the RP /ɑ:/ vowel. Mel does the same in her next turn, thus continuing the playful approach and collaborating in the mimicry of her own speech. Collaborative playfulness of this sort is understood here as an affiliative activity, although underlying it may be the mild criticism inherent in most cases of prosodic mimicry (Couper-Kuhlen 1996); in the framework of Speech Accommodation Theory (Giles 1973) Zack's noticeable moving away from the standard pronunciation could be seen as divergence. However, the overall outcome here is the joint creation of playfulness in the absence of any expressed disaffiliative stance. As in the cases of agreement and other responding actions, the joint construction of playfulness provides for a sequentially progressing trajectory.

The remaining five cases in the collection include one instance of an affiliative news receipt that shares the co-participant's stance; a compliment; and a collaborative turn completion. There are two cases where empathy is made relevant and then offered. The only case in the collection that can potentially be interpreted as displaying empathy directly relies not on lexical content of the mirroring turn itself, which is *mm*, but on its sequential position following an empathy-relevant turn by the prior speaker (*i'm stressed about these essays*). The vocalization *mm* is accompanied by nodding and thus affiliative in Stivers's sense (Stivers 2008).

(14) MB 00.05.40

193 Meg: the REASON why i'm STRESSED at the minute.
 194 is the COURtauld is stIll; (.)
 195 dePENDent upOn this sIxty FI:VE;
 196 .hh and thAt's why i'm M:Ega s- like; (.)
 197 i'm STRESSED about **these ESSays**;
 198 (0.2)
 199 Beth: [<<nodding> mm::;>
 200 Meg: [it's lIke;
 201 (1.7)
 202 Beth: an OverA:LL mArk of sixty [five;
 203 Meg: [m;

Meg is talking about the final grade she needs to receive for her undergraduate degree in order to continue with postgraduate study. As Figure 5 shows, Beth's response *mm* matches Meg's phrase *these essays* in both pitch level and curve. In a strict sense it is only Meg's mention of her own emotional state in the first turn (*I'm stressed*, line 197), making empathy relevant, that makes this an empathetic response; in contrast to the empathetic receipts described by Hepburn and Potter (2007) this example contains no verbal commitment to empathy.

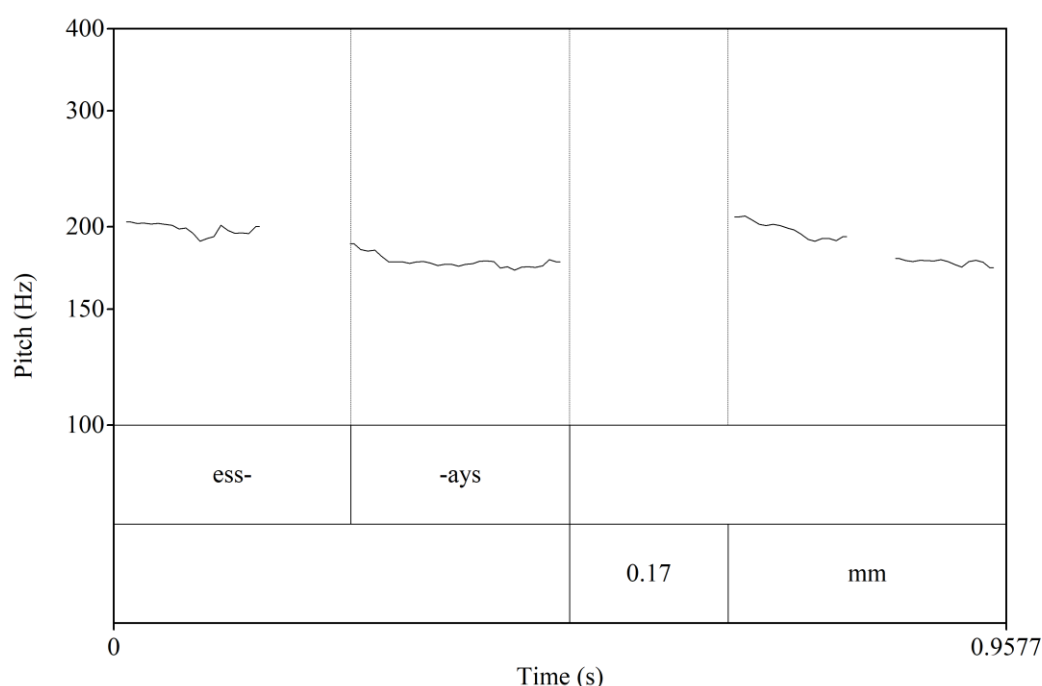


Figure 5: Pitch trace Extract 14, lines 197-199

In the second instance a stance along the lines of empathy and understanding is being displayed for a non-present third party.

(15) MZ 00.01.42

67 Zac: i thInk she's g- she's g-
 68 YEAH;
 69 (0.8)
 70 she's had some (.) TOUGH NE:WS lately so;
 71 Mel: OH: WHA:T;
 72 (0.4)
 73 OH;
 74 [(1 syll) try not-
 75 Zac: [<<p> F::AMily stuff,>
 76 (0.2)
 77 Mel: ts <<p> OH DEAR;> .hh
 78 (2.2)
 79 Zac: .hhh (.) <<p> ((but she's alRIGHT));>
 80 (1.8)
 81 she's looking fOrward to her HOLIdays,

The prosodic delivery of the end of the empathy-relevant turn (*family stuff*, line 75) as well as it's mirrored response (*oh dear*, line 77) shows some similarities with the 'bad news' delivery described by Freeze and Maynard (1998). Both are low in pitch register and have reduced loudness. The empathy that is being expressed here is not directed at the co-participant and as such contributes only indirectly to interactional rapport building; instead, it is a joint expression of empathy as part of a conversational narrative.

In one case in the collection, empathy is being expressed verbally and for the co-participant; however, the prosodic mirroring does not take place on the empathetic turn but instead on the recipient's response to it. The action performed by the

prosodically mirroring turn is one of agreement. Lucy's distinctive pitch curve, repeated twice, consists of a pitch step-up on the first accent and a step-down on the second. This pattern, as well as the pitch register more generally, are matched by Emma's responding turn.

(16) EL 00.07.58
 297 Emma: oh i WISH i knew what i was going to do with my
 298 life, .hhh hhhhh
 299 (0.3)
 300 Lucy: ↑YOU'LL be ↓FINE -
 301 ↑YOU'LL ↓FIND something -
 302 Emma: ↑Oh i'm ↓SURE i'll work out something to do but -
 303 Lucy: <<h> YEAH - >

The collection overall contains very few displays of empathy in our narrower sense (see section 4.4). It is therefore perhaps not surprising that it also contains few instances of empathy displays with prosodic mirroring. It is clear from the findings reported in this sub-section that mirroring and affiliative stance do co-occur; although, as the following sections will show, each can also occur without the other. What does seem to be a common feature of all mirroring turns considered so far is their occurrence in sequentially second position, irrespective of the social action the turns themselves are performing (agreement, teasing, news receipts, empathy). Second position turns accomplish the continuation of a sequence in progress. Sequence continuation (or 'alignment' in the terminology of Stivers 2008 and Stivers et al. 2011) does not happen automatically through ongoing talk, as participants have other, sequentially discontinuous practices at their disposal (e.g. repair initiation, insertion of other sequences, withdrawal of reciprocity). Instead, sequence progression has to be achieved by participants, and the slot following a first pair part or other response relevant turn is a key interactional moment for progressing – or not progressing – the trajectory of a sequence at hand. By mirroring elements of the first turn a second turn displays a backward-looking orientation while at the same time implementing a forward-facing action trajectory through verbal and other content. This author has described the action coordinating role of mirroring elsewhere (Szczepek Reed 2012). More importantly than any affiliative function, prosodic mirroring seems to underpin alignment in the sense of sequential progressivity. Mirroring shows that the matching utterance, rather than being a new beginning, continues the interactional trajectory that was initiated by a previous participant.

4.2 Prosodic mirroring and affiliation-neutral turns

Of the 369 prosodically mirroring turns in the collection the majority - 236 (64%) - are affiliation-neutral, that is, they display no affiliative stance. The social actions most frequently represented in this sub-collection are responses to enquiries, news receipts, acknowledgements, receipts, confirmations and continuers. The following extracts are representative of some of these actions. In (17) *yeah* is used first in the role of a continuer (line 369) and subsequently in that of a response to enquiry (line 373). On both occasions it matches the respective prosodic design of the immediately prior turn.

(17) BM 00.11.05
 364 Matt: SO;
 365 (0.4)

366 **WHEN you go to SKYE,**
 367 (0.4)
 368 [(((like that))),
 369 **Beth: [YEAH,**
 370 Matt: do you go- uh;
 371 **do you GO every YEAR.**
 372 (0.4)
 373 **Beth: YEAH.**
 374 (1.2)
 375 PREtTy MUCH.

The continuer *yeah* at line 369 matches the rise-to-mid pitch of the previous stressed syllable *skye*; the responding *yeah* at line 373 matches the fall-to-low intonation of the previous speaker's last word *year*. Neither display an affiliative stance, and this is not treated as noticeable: affiliation is not made relevant by the previous turns. The *yeah* response to the yes-no interrogative provides the preferred type-conforming response (Raymond 2003) on the grammatical level. Sequentially, both are cases of continuing a trajectory-in-progress, and of responding in a broader sense. The following extract shows a fuller responding turn following a WH-interrogative (*how*).

(18) MB 00.02.55

117 Meg: <<sighing> ↑uhhh hhhh;>
 118 Beth: [((1 syll)
 119 **Meg: [<<breathy> ↑hOw's YOUR dAY bEEn;**
 120 **Anyway;>**
 121 (0.4)
 122 **Beth: <<breathy> ugh:: jUst UNproDUCTive;>**
 123 (0.5)
 124 .hh aPART from (0.3) aPART from that u::m (0.5)RUN;

Meg has just ended a telling concerning her academic assignment and following a pause produces the voiced sigh at line 117, which acts as a 'transitional sigh' (Hoey 2014: 192) before a new enquiry (lines 119-120). Beth's response at line 122 matches the breathy voice quality of Meg's turn, as well as its declining, fall-to-mid pitch curve. It is possible to argue that Meg's first pair part, *how's your day been anyway* (line 119-120) displays an affiliative stance towards Beth; however, the prosodic mirroring accompanies the second pair part, where no affiliative stance is being displayed. The pattern of prosodic matching co-occurring with a *response* to an affiliation display rather than the affiliation display itself echoes that seen in (16). Sequentially, the prosodically mirroring turn is once again one that implements progressivity by its sequential status as second pair part. The final extract includes cases of prosodic mirroring that continue across more than a single adjacency pair.

(19) BM 00.07.33

803 Beth: but you've gOtta kInd of- (.)
 804 **you'd hAve to FIND some wAY of GETting thEre?**
 805 (1.5)
 806 **Matt: hOw FAR OFF is it?**
 807 (1.6)
 808 **Beth: a cOUple a MILES?**
 809 so you CAN CYCLe,
 810 (3.6)
 811 Matt: if JOHN takes his cAr;
 812 (0.2)
 813 a FEW people'll get in that,
 814 Beth: ↑M;

815 (1.3)
 816 Matt: some BIKES;
 817 [(2 syll))
 818 Beth: [and JIM might (0.3) HAVE his CAR -
 819 (1.7)
 820 Matt: w- JIM WHO?
 821 (0.5)
 822 Beth: e:r JIM BOBby's frIEnd?
 823 (0.5)
 824 Matt: mhm?
 825 (0.3)
 826 Beth: cause HE wants to go up to scOtland to pl- climb BEN
 827 NEVis.
 828 (0.4)
 829 Matt: YEAH.
 830 (0.2)
 831 Beth: but thAt's not really CLOSE to where we're- (.) we're
 832 gonna BE.
 833 (0.9)
 834 but that- It's KIND of on the WAY?
 835 so i m- what i MIGHT DO is;
 836 TELL him when we're gonna be THERE,
 837 (0.7)
 838 and Obviously SAY to him;
 839 oh you're WELcome whenever you (.) WANT to COME -
 840 (0.3)
 841 Matt: YEAH -
 842 (1.1)
 843 Beth: BUT;
 844 (2.8)

All instances of prosodic mirroring in this extract are affiliation neutral; in fact, one instance (line 806) is neither affiliative nor sequentially aligning. The participants are talking about a planned trip to Scotland and potential local destinations. Beth's declarative statement at line 804 is produced with try marking intonation (Sacks & Schegloff 1979), that is, the high terminal rising pitch pattern sometimes referred to as 'upspeak' (Bradford 1997; Ching 1982). Both Beth and Matt use this delivery frequently throughout the recording and across a range of turns, most of which are not try markers for reference. Matt delivers his subsequent question (line 806) with the same pattern. The result is prosodic repetition on a turn that initiates a new sequence (an enquiry). It could be argued that the high rising pitch pattern is linked to sociophonetics and interrogative grammar, respectively. Beth follows this with a sequentially aligning response to enquiry, again with matching pitch (line 808).

Lines 820 – 824 show another recurrence of the same pitch delivery on subsequent turns, this time across a three-part repair sequence. Once again, the pitch pattern is a final rise-to-high. Immediately following the repair sequence, Beth continues with another declarative (line 826 – 827), this time with distinctive low falling pitch. Matt receipts her turn with the same delivery (line 829), and Beth continues with another declarative accompanied by the same pattern (lines 831 – 832). As in previous cases, the prosodic mirroring underpins sequential continuity without a display of affiliation. The same is the case in the final instance, where Matt's continuer *yeah* matches the level pitch delivery of Beth's previous turn (lines 839 – 841).

As the above examples show, prosodic mirroring is a frequent element of sequential progressivity and responding, and it can play a role in the structure of tightly organized sequences such as adjacency pairs and three-part repair sequences. The

social actions it accompanies - responses to enquiries, news receipts, acknowledgements, receipts, confirmations and continuers – are all actions that continue a current trajectory-in-progress and that achieve alignment (Stivers et al. 2011). In the instances above they do so without being connected to an affiliative stance.

4.3 Prosodic matching and disaffiliative turns

There are 12 cases (3%) in the collection where prosodically mirroring turns perform disaffiliative social actions. These are the cases that most robustly contradict any claims that mirroring behavior is necessarily linked to interpersonal rapport building. The most frequent action performed by disaffiliative mirroring turns is disagreement (9 cases). The three remaining instances are cases of non-playful mimicry (1), other-correction (1) and challenging a prior claim (1). The extract below shows two instances of disagreement and accompanying prosodic mirroring. Mel and Zack have been discussing their plans to go skiing in the semester break. Zack is reminding Mel to bring her passport.

(20) MZ 00.07.30

1206 Zack: reMEMber it,
 1207 cause i- jUst the sort of thing you DO;
 1208 you'll gO hOme and be like <<h> OH:: -
 1209 lEft it in (CITY) - >
 1210 (0.9)
 1211 and thEn it's LIKE -
 1212 (0.4)
 1213 CAN'T go SKIing.
 1214 (1.2)
 1215 hOw are you going to remember.
 1216 (.)
 1217 WRITE it in- wrIte in your dIary.
 1218 Mel: <<hh> I'll reMEMber;
 1219 [dOn't WORry;. >
 1220 Zack: [<<f+h> you WON'T re[MEMber k-;>
 1221 Mel: [<<h> i WILL remEmber[::r;>
 1222 Zack: [you wOn't
 1223 remEmber.
 1224 can you wrIte IN PLEASE.
 1225 (3.5)
 1226 have you got your SKI JACket up hEre,
 1227 (0.3)
 1228 Mel: <<h + held pitch> NO::: - >
 1229 <<h> hAven't got my SKI jacket up here;>
 1230 .hh [um-
 1231 Zack: [((1 syll)) (.)
 1232 <<h> it's WORTH it,
 1233 [cause if YOU get a->
 1234 Mel: [<<h> yEAh I KNOW -
 1235 i'm NOT gonna forgEt my PASSPORT;
 1236 because it's WITH all my other DOcume:nts;
 1237 which i need to take HOME.>
 1238 Zack: <<h> yeah but hOw many times have you said things> like
 1239 THA:T;
 1240 and then [you've forgotten it.
 1241 Mel: [<<h> i WON'T forgEt my PASSPORT;>
 1242 Zack: oh s- (.) THAT'll make sure;

The main prosodic feature being mirrored is pitch register, with both participants using high pitch throughout the argumentative sequence. At lines 1218 – 1221, the prosodic repetition accompanies the participants' repeated verbal insistence (*I'll remember don't worry – you won't remember – I will remember*) before Zack returns to default pitch. Soon afterwards Mel picks up the disagreeing stance again, as well as the prosodic design of her previous turns (line 1228 - 1230). Zack mirrors her high pitch register (1231 – 1233), and the disagreement continues at high pitch across three more turn transitions (1234 – 1241).

The following extract shows two further instances of disaffiliation co-occurring with prosodic mirroring. Rob is talking about a teacher at his former high school who held a doctorate. His talk contains a homophobic reference delivered in the form of reported speech of his younger self (line 578).

(21) KD 00.02.40

570 Rob: bUt EVERyone used to JOKE that um - (.)
 571 .hh she: Only got a DOCTORate;
 572 so she didn't have to wrEstle with MS anymore?
 573 (0.6)
 574 cause she was like a MS (.) ELLetson;
 575 (0.5)
 576 and (0.4) being .hh Immature at the TI:ME;
 577 we didn't really appreciate WHY other than that she was a
 578 (.) <<f> a LESbian BITCH;>
 579 (0.2)
 580 [you KNOW;
 581 Kat: [ha::h hah
 582 (0.2)
 583 dv- (.) diVO:RCED.
 584 (0.7)
 585 <<h> isn't MS diVO:RCED.
 586 Rob: <<h> no mu- no MS is> where you DON'T want t- where you
 587 think it's WRONG that a woman should have to deCLA:RE;
 588 (0.5)
 589 HER -
 590 Kat: <<h> ↑Oh ↑↑cOO:[:1;>
 591 Rob: [mArital STATUS.
 592 Kat: <<h> ↑I wanna be MS,
 593 (.)
 594 [↑I'm gonna be [my own s->
 595 Rob: [<<hh> as IF you don't KNOW tha:t;>
 596 Kat: <<h> I thought it was diVO:RCED;>
 597 (0.6)
 598 <<all+f> i thOUght it was like - >
 599 (.)
 600 <<all+f> i think of like> [like ↑sta:ge:s;
 601 Rob: [<<h> that would be even
 602 ↑wo::rse;>
 603 [than a doctorate;

The first instance (lines 585 - 586) shows an other-correction following a repair initiation. Rob corrects Kat in her expressed interpretation of the meaning of 'Ms'. She initiates her repair initiation (*isn't Ms divorced*) with high pitch register, and the beginning of Rob's dispreferred response mirrors that element of her prosodic delivery. The second disaffiliative sequence is longer and less tightly structured. Kat produces a high-pitched news receipt and announcement *oh cool I want to be Ms I*

want to be a s- (lines 589 – 593). Her turn is verbally and prosodically designed to start a new trajectory, away from the epistemic issue around the meaning of ‘Ms’. Rob’s prosodically matching response (line 594) returns to and challenges Kat’s previous knowledge claim. Kat reiterates her previous stance (*I thought it was divorced*), to which Rob responds with a playful but negative assessment (*that would be even worse*). As above, the prosodic mirroring stretches over a longer sequence during which an argumentative stance is being negotiated and continued.

The above data show that, as in previous sections, prosodic mirroring accompanies ongoing and emerging trajectories of talk to which both parties show their commitment. While the interpersonal function of some of the above mirroring turns may be to disagree or to be disaffiliative in other ways, all instances have in common that alignment (Stivers et al. 2011) is being achieved, as a conversational trajectory is being continued, instead of, for example, being interrupted, questioned or abandoned.

4.4 Affiliation without prosodic matching

The corpus shows that affiliation, and specifically empathy, are also expressed without prosodic matching. The collection holds few empathetic turns in the narrow sense, but with the exception of (14) those that exist introduce new prosodic patterns, rather than matching prior ones. The two extracts below are representative.

(5) BM 00.18.35

624 Beth: HOW you DOing -
 625 Fel: sa- hh.
 626 WELL i been- (.)
 627 i was like i HAD to do an Essay for tomOrow;
 628 .hh but i was in the lIbrary i felt ILL,
 629 aGAIN,
 630 [like FEver,
631 Beth: [ee- oh ↑NO:;
 632 (0.3)
 633 Fel: so i was like i’m gOing HOME;

(22) BM 00.08.30.

284 Beth: i thOUght it was for the Internship.
 285 Matt: OH NO;
 286 i dIdn’t get anything BACK from them.
 287 (1.6)
288 Beth: <<p> shit - >
 289 (1.3)
 290 but it’s Early DAYS though Isn’t it;

In (5), Beth’s empathetic *oh no* is expressed with a high pitch step-up on *no*, followed by fall-to-mid intonation. This is a new prosodic design compared to the rise-to-mid intonation of Felicity’s previous turns. In (22) Beth sympathizes with Matt not having heard back from an internship application. Her expression of sympathy *shit* is quiet and has level pitch. By comparison, Matt’s prior turn is produced with ordinary loudness and low falling pitch. The above extracts show prosodic designs that position empathy as a new action: an individually offered contribution, rather than an imitative response. This goes beyond previous claims that ascribe to empathetic turns

a fixed pattern of low pitch, decreased loudness and other prosodic reductions (Kupetz 2014a; b).⁴

As the data below demonstrate, speakers in everyday talk use sound mirroring in affiliative and disaffiliative circumstances, as well as in those where affiliation plays no observable role. As with other interactional resources, participants have a choice whether to mirror others or not; and they exercise that choice at every sequentially relevant location. This study claims that instead of affiliation, empathy or rapport building, prosodic mirroring in fact accomplishes sequential alignment. That is, the contribution that sound mirroring makes to interaction is to show that a matching utterance is not a new beginning, but that instead it continues the interactional activity, sequence and discourse trajectory that was set in train by a previous speaker's talk. This contribution to progressivity is in itself a collaborative act. However, the data show that there is no direct link between affiliation and sound mirroring, but instead that mirroring is a resource for sequential coherence.

5. Concluding discussion

The above data show that sound mirroring and affiliative stance are realized independently of each other in naturally occurring talk. Sound mirroring co-occurs with affiliative and disaffiliative stances, but most frequently it is affiliation-neutral; while affiliation can be achieved with or without prosodic mirroring. Therefore, claims that imitation in interaction is directly linked to more prosociality and rapport between speakers cannot be upheld. Further, the data above reveal that sound mirroring, when part of naturally occurring interaction, is not automatic, but that participants can choose to mirror, or not. Prosodic mirroring in conversation is thus a communicative resource on the level of other linguistic forms and embodied behaviors; it is not the unmediated result of neural resonance or structural priming.

Imitation has famously been shown to underpin the development of young children's ability to recognize the 'like me' nature of others, and as such has been shown to underpin social cognition (Meltzoff & Moor 1977; Meltzoff 2007) as well as Theory of Mind (Gallese & Goldman 1998; Perra et al. 2008). It is therefore not surprising that such a vast number of experimental participants in psychology research over the years have indicated that they perceive mirroring behavior by others as reassuring of their positive regard and thus as a strong carrier of attractive attributes. To see and hear that others are 'like me' reassures us of our belonging, as well as of our being seen and heard. In addition to these obvious benefits of experiencing others mirroring us, our own imitation of others also clearly has cognitive advantages: using other speakers' (linguistic) behavior as a template is undeniably preferable to having to produce new forms and structures at every juncture in conversation. Thus, both mirroring and being mirrored combine to establish the lived experience of intersubjectivity.

⁴ It is of course possible that other aspects of talk are being mirrored here. The relationship between prosodic mirroring and facial expression could be a particularly fruitful avenue for future research, as reciprocity of facial expression seems to be linked to sequential as well as affective negotiations among participants (Kaukomaa, Peräkylä & Ruusuvuori 2013; 2015).

What is proposed here is an additional and more nuanced conceptualization of the positive effect of imitation on human interaction. The analysis above shows that imitative behavior, when performed as part of the emerging development of social interaction, serves to reassure participants not only, and not necessarily, of interpersonal similarities and of joint *being*, but of a ‘common cause’, and of joint *doing*. Importantly, the mirroring behavior this applies to is embedded in the jointly achieved and emerging reality of accountable social conduct; it is not, for example, the elicited mirroring of single recorded sentences in an experimental shadowing task or the deliberate mimicry performed by knowing participants in a confederate experimental design. That is to say, mirroring, when done in real-life conversation, is accountable to its recipients for its contribution to talk and its meaning. In this real-life context, prosodic mirroring seems to play a key role in building and continuing trajectories of action, sequence and stance, and thus in facilitating the joint achievement of progressivity (see also Szczepk Reed 2006; 2012). In Goodwin’s (2013) terms, prosodic mirroring is one of several operations next speakers can perform on existing ‘public substrate’ to build next actions that are rooted in and relevant to prior talk. Prosodic mirroring can thus be seen as another form of ‘format-tying’ (Goodwin & Goodwin 1987): a next speaker re-uses the sound patterns of a previous speaker but modifies the overall turn in lexical, syntactic, embodied and potentially prosodic ways. Similar to lexis and grammar, prosody provides certain types of ‘formats’ in the form of recognizable sound patterns (Szczepk Reed 2011).

From this perspective, mirroring can be understood as a resource for participants’ display of joint orientation to the same interactional project (a disagreement, a question-answer sequence, an intimate stance) and its progression. Far from being automatic, it is a display of commitment to a shared direction in the moment of its emergence, an enacted agreement to continue along the path a previous speaker has chosen. Mirroring seen in this light is perhaps even more of a ‘social glue’ (Dijksterhuis 2005; Lakin et al. 2003) than previously assumed. Beyond reassuring us that others are like us and beyond freeing up processing resource, mirroring plays an interactive prosocial role in progressing joint action, a role that is irrespective of participants’ interpersonal or emotional connections. While imitation shows in a very basic way that interactants share certain mental representations, it also shows that they share – at specific moments in time – a commitment to joint engagement in a common conversational project, however empathetic or unempathetic its pursuit may be.

The implications of such a reconceptualization of mirroring are significant. Research into human social behavior too often interprets its data as evidence for *being* rather than *doing* (cf. Sacks 1984 on doing ‘being ordinary’). However, in the socially accountable and continuously negotiated setting of natural talk behaviors become practices for accomplishing interactional goals, as well as – and at times instead of – indicators of inner states. While interactants may or may not be managing ‘real’ internal thoughts, feelings and attitudes, they are always managing talk. In asking what mirroring does, rather than what it symptomizes, we are able to uncover a considerably broader and higher-level contribution to human sociality: a facilitating function for the progression of interaction as such. This perspective also has implications for an understanding of populations who mirror others less, such as those with depression and autism. An assumption that mirroring is related to empathy may lead to the subsequent assumption that empathy in those populations is reduced. However, in light of evidence from naturally occurring talk which shows that

mirroring is a social practice for jointly building conversations, an absence of mirroring may be conceived of instead as social rather than emotional divergence.

Appendix

Transcription Conventions (adapted from Selting et al., 2009/2011)

Pauses and lengthening

(2.85)	measured pause
:::	lengthening

Accents

ACcent	primary pitch accent
Accent	secondary pitch accent

Phrase-final pitch movements

?	rise-to-high
,	rise-to-mid
-	level
;	fall-to-mid
.	fall-to-low

Changes in pitch register, loudness and voice quality

<<l> >	low pitch register
<<h> >	high pitch register
<<f> >	forte
<<p> >	piano

Breathing

.h, .hh,.hhh	in-breath
h, hh,hhh	out-breath

Other conventions

[overlapping talk
[overlapping talk

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